Remarks

Claims 1-50 are pending in the subject application. Applicants acknowledge that claims 11-50 have been withdrawn from further consideration as being drawn to a non-elected invention. By this Amendment, Applicants have canceled claims 2-5 and 9-50, amended claims 1 and 6-8, and added new claims 51-62. Support for the amendments and new claims can be found throughout the subject specification and in the claims as originally filed (see, for example, page 8, lines 10-20; page 12, lines 11-16; page 43, lines 2-10; page 67, line 16 through page 71, line 24; page 85, lines 14-23; and Figure 8). Entry and consideration of the amendments presented herein is respectfully requested. Accordingly, claims 1, 6-8, and 51-62 are currently before the Examiner. Favorable consideration of the pending claims is respectfully requested.

As an initial matter, attached with this Amendment is an executed Revocation of Power of Attorney with New Power of Attorney and Change of Correspondence Address and an executed Statement Under 37 CFR 3.73(b). Applicants respectfully request entry of the new Power of Attorney document in this matter.

Additionally, Applicants also submit a Petition to Delete Inventors Under 37 C.F.R. § 1.48(b), along with an Amendment Under 37 C.F.R. § 1.48(b)(1), to remove two inventors who did not have inventive input for the claims originally examined. Entry and consideration of the Petition is respectfully requested.

The Office Action objected to the specification because of informalities. Specifically, "boxes" were present after TNF and IFN instead of alpha and gamma symbols, respectively, on page 70, line 15 of the specification, the as-filed specification contained embedded hyperlinks (or other forms of browser executable code) and improper use of trademarks was noted in the Office Action. Applicants respectfully submit that these issues are moot in view of the amendments made to the specification and filed with this response. Accordingly, reconsideration and withdrawal of the objections is respectfully requested.

In addition, the claims have been objected because of the phrase "four helical bundle cytokine fold." Applicants gratefully acknowledge the Examiner's careful review of the claims. Claim 1 has been amended and the phrase "four helical bundle cytokine fold" has been deleted from the claims. Accordingly, reconsideration and withdrawal of the objection is respectfully requested.

Claims 1-10 are rejected under 35 U.S.C. § 101 as directed to non-statutory subject matter. By this Amendment, Applicants have amended claim 1 to recite that the polypeptide is "isolated." Thus, it is believed that the claims of this application recite statutory subject matter and reconsideration and withdrawal of the rejected under 35 U.S.C. § 101 is respectfully requested.

Claims 1-10 are rejected under 35 U.S.C. § 112, first paragraph, as nonenabled by the subject specification. Applicants respectfully assert that the claims are enabled by the subject specification. The Office Action states that the specification is enabled for a polypeptide comprising or consisting of the amino acid sequence of SEQ ID NO: 2 but is not enabled for any fragment of the polypeptide of SEQ ID NO: 2, or any "functional equivalent" of the polypeptide of SEQ ID NO: 2. Specifically, the Office Action argues that the pending claims "do not specify or require any specific function of the claimed polypeptide, or specify or define any degree of similarity/identity that would make a polypeptide, or specify or define any degree of similarity/identity that would make a polypeptide "homologous" to the polypeptide of SEQ ID NO:2". The Office Action further alleges that the specification provides no guidance or examples which teach how to make fragments or variants of the polypeptide of SEQ ID NO: 2 that retain interferon gamma-like activity. In further support of this rejection, the Office Action cites to Mickle *et al.* as evidence that even single amino acid substitutions or deletions "can have dramatic and unpredictable effects" on the function of a protein. Applicants respectfully traverse.

The amended claims recite a specific function for the polypeptides. The amended claims also specify a high level of sequence identity (greater than 90%) for the homologous polypeptides and no longer refer to "functional equivalents", "homologous" polypeptides or those polypeptides "having an antigenic determinant in common" with other polypeptides. Applicants further submit that, once given the amino acid sequence of SEQ ID NO:2, the skilled person would be able to generate fragments and variants of SEQ ID NO:2 using simple, well-known laboratory techniques (*e.g.* restriction cloning and/or error prone PCR), without undue burden or undue experimentation. Furthermore, one skilled in the art would have been able to test any fragments or variants so generated to identify polypeptides with interferon gamma-like activity, without undue burden. For example, the application discloses assays that can be used to identify suitable polypeptides on page 8:

> Interferon activity often measured as an anti-viral activity or antiproliferative activity on cancer cells. Examples of assays may be found in Schiller J.H, J Interferon Res 1986; 6(6):615-25, Gibson, U.E. et al., J Immunol Methods (1989) 20; 125(1-2): 105-13 and Chang et al., J. Biol. Chem. (2002) 277(9):7118-7126.

In addition, the as-filed specification provides methods that could be used to identify fragments and variants with interferon gamma-like activity in *in vivo* protocols, such as those provided in Example 6. Thus, it is respectfully submitted that the as-filed specification enables the claimed invention.

With respect to the reference that the Office Action relies upon in support of its position that even a single amino acid change in a polypeptide can have adverse effects on function, Applicants note that the reference (Mickle *et al.)* relates to cystic fibrosis and the abnormal function of a chloride channel that arises from the alteration of one or more amino acids within the polypeptide. Applicants respectfully submit that this reference does not support the lack of enablement argument advanced in the Office Action with respect to SEQ ID NO: 2.

As indicated in the as-filed specification, the claimed polypeptide is a member of the IFN-γ family. IFN-γ polypeptides from a variety of species are known in the art and these polypeptides contain amino acid differences while still retaining the same biological function. Additionally, muteins, variants and mutants of the human IFN-γ polypeptides are also known in the art. For example, muteins and variants of the IFN-γ polypeptide are discussed in the Background section of U.S. Patent No. 6,958,388 (see columns 1-3). Thus, it is respectfully submitted that one skilled in the art would have recognized that IFN-γ polypeptides were tolerant of amino acid substitutions and the prior art would have been able to guide one skilled in the art as to those amino acids that could be targeted in such a fashion. Even were this not the case, Applicants also submit that the as-filed specification enables the currently claimed invention and that one skilled in the art would not be forced to engage in undue experimentation in order to practice the currently claimed invention.

Claims 1-10 are rejected under 35 U.S.C. § 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention. Applicants respectfully assert that there is adequate written description in the subject specification to convey to the ordinarily skilled artisan that they had possession of the claimed

invention. The Office Action argues that claims 1-10 lack adequate written description, because the claimed "genus of polypeptides" is not adequately described in the specification. The Office Action also argues that the claims do not require that the claimed fragments, functional equivalents or polypeptides with less than 100% sequence identity have any specific biological activity or any particular structure other than being functionally equivalent, a fragment of, or homologous to SEQ ID NO: 2. The Office Action further argues that the as-filed specification does not provide adequate written description as to those portions of SEQ ID NO: 2 that are required to be conserved in order have IFN-γ like activity. Applicants respectfully traverse.

Applicants have amended the claims to indicate that the claimed polypeptide or fragment thereof has anti-viral activity, antiproliferative activity on cancer cells, the ability to increase levels of TNF-α, IL-2, IL-4, IFN-γ, aspartate aminotransferase (ASAT) or alanine aminotransferase (ALAT) *in vivo* or the ability to induce IFN-γ secretion by concanavalin A or phytohemagglutinin stimulated peripheral blood mononuclear cells. Thus, it is respectfully submitted that the currently claimed polypeptides have a specific biological activity recited within the claims. With respect to the argument that the specification fails to teach those portions of the polypeptide of SEQ ID NO: 2 that must be conserved in order to retain biological activity, Applicants respectfully submit that such information was readily available to one skilled in the art at, or prior to, the earliest effective filing date for the claimed invention. As discussed above, various muteins, mutants and variants of IFN-γ were known in the art prior to the invention of the claimed subject matter. Additionally, the prior art recognized and taught those portions of IFN-γ that were tolerant and intolerant of amino acid substitutions while retaining the biological activity of the IFN-γ molecule (see, for example, U.S. Patent No. 6,120,762 (Background section)). Applicants further submit that the disclosure of such knowledge is not an absolute requirement. As the Federal Circuit has indicated, "... given the ready accessibility of the journals, the absence of incorporation by reference is not problematic. Indeed, "[a] patent need not teach, and preferably omits, what is well known in the art." *Spectra-Physics, Inc. v. Coherent, Inc.*, 827 F.2d 1524, 1534 (Fed.Cir.1987)", see *Falko-Gunter Falkner v. Inglis*, 448 F.3d 1357, 1365, 79 U.S.P.Q.2d 1001 (Fed. Cir. 2006)). Accordingly, it is respectfully submitted that the claimed invention is described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession

of the claimed invention. Accordingly, reconsideration and withdrawal of the rejection is respectfully requested.

Claims 1-10 are rejected under 35 U.S.C. § 112, second paragraph, as indefinite. The Office Action indicates that the terms "functional equivalent" (in claims 1-10), "IFN-γ-like" (in claims 1-10), "significant" (in claim 9), and "homologous" (in claim 3) are not defined by the claims or specification. Applicants respectfully assert that the claims as filed are definite. However, by this Amendment, claims 3 and 9 have been canceled, thereby rejection this aspect of the rejection moot. Additionally, the terms "functional equivalent" and "interferon gamma-like" secreted protein have been deleted from the claims. Accordingly, reconsideration and withdrawal of the rejection under 35 U.S.C. § 112, second paragraph, is respectfully requested.

Claims 1 and 4-10 are rejected under 35 U.S.C. § 102(e) as anticipated by Penn *et al.* (U.S. Published Patent Application No. 2002/0048763). Claims 1 and 4-10 are also rejected under 35 U.S.C. § 102(e) as being anticipated by Drmanac *et al.* (U.S. Published Patent Application No. 2005/0196754). The Office Action states that Drmanac *et al.* teach a polypeptide with several regions of identity to the polypeptide of SEQ ID NO: 2. The Office Action also indicates that Penn *et al.* teach a polypeptide with several regions of identity to the polypeptide of SEQ ID NO: 2. Applicants respectfully assert that the Penn *et al.* and Drmanac *et al.* references do not anticipate the claimed invention as neither Penn *et al.* nor Drmanac *et al.* discloses any fragment of SEQ ID NO: 2 having "interferon gamma-like activity" nor is the full length polypeptide from which the subsequence fragments are drawn taught to have "interferon gamma-like activity". Accordingly, it is respectfully submitted that the claims are not anticipated by the cited references and reconsideration and withdrawal of the rejection under 35 U.S.C. § 102(e) is respectfully requested.

Claims 1-10 are rejected under 35 U.S.C. § 102(f) because the applicants did not invent the claimed subject matter. The Office Action states that SEQ ID NO: 2 of the subject application and SEQ ID NO: 36 of co-pending application Serial No. 10/872,859 recite identical subject matter; however, inventors Boschert and Chvatchko are not listed as inventors on the '859 application. As noted above, these individuals did not provide inventive input to the currently claimed subject matter. Accordingly, a Petition to Delete Inventors Under 37 C.F.R. § 1.48(b), along with an Amendment Under 37 C.F.R. § 1.48(b)(1) has been filed in this matter. Upon entry of this petition

and amendment, it is respectfully submitted that this issue will become moot. Accordingly, reconsideration and withdrawal of the rejection is respectfully requested.

Claims 1-10 are provisionally rejected under 35 U.S.C. § 101 as claiming the same invention as that of claims 1-10 of copending Application No. 10/872,859. In an Election and Amendment filed on April 12, 2007, Applicants rescinded a previously made election (prior to the receipt of an Office Action on the merits) in the '859 application and canceled claims 1-10. Applicants respectfully submit that the amendment made to the '859 application and the cancellation of claims 1-10 have rendered this issue moot. With respect to the issue of priority for the claimed subject matter in this matter, Applicants note that the deletion of inventors Boschert and Chvatchko in this application as not having provided inventive input with respect to the currently claimed subject matter results in the listing of inventors Fagan, Phelps, Gutteridge and Power as the inventors of the currently claimed subject matter. Thus, these individuals are the prior inventors of the claimed subject matter. Accordingly, reconsideration and withdrawal of the rejection is respectfully requested.

Applicants also wish to bring application 10/558,800 to the attention of the Examiner (cited in the Information Disclosure Statement as US-2007-0044163-A1). This application is another application in this family of cases.

It should be understood that the amendments presented herein have been made solely to expedite prosecution of the subject application to completion and should not be construed as an indication of Applicants' agreement with or acquiescence in the Examiner's position. Applicants expressly reserve the right to pursue the invention(s) disclosed in the subject application, including any subject matter canceled or not pursued during prosecution of the subject application, in a related application.

In view of the foregoing remarks and amendments to the claims, Applicants believe that the currently pending claims are in condition for allowance, and such action is respectfully requested.

The Commissioner is hereby authorized to charge any fees under 37 CFR §§1.16 or 1.17 as required by this paper to Deposit Account No. 19-0065.

Applicants invite the Examiner to call the undersigned if clarification is needed on any of this response, or if the Examiner believes a telephonic interview would expedite the prosecution of the subject application to completion.

Respectfully submitted,

Frank C. Eisenschenk, Ph.D.
Patent Attorney
Registration No. 45,332
Phone No.: 352-375-8100
Fax No.: 352-372-5800
Address: P.O. Box 142950
Gainesville, FL 32614-2950

FCE/gyl
Attachments: Executed Revocation of Power of Attorney with New Power of Attorney and Change of Correspondence Address
Executed Statement Under 37 CFR 3.73(b)
Petition to Delete Inventors Under 37 C.F.R. § 1.48(b)
Amendment Under 37 C.F.R. § 1.48(b)(1)
Second Supplemental Information Disclosure Statement